



**Massachusetts Bay  
Transportation Authority**

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**Green Line Track and Signals Replacement  
– Beaconsfield to Riverside**

**City of Newton Project Briefing**

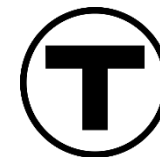
**June 25, 2018**



## Agenda

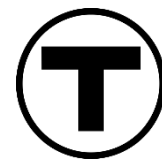
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1. Introduction
2. MBTA Investment in Newton
3. Project Overview
4. Operations During Construction
5. Work Locations
6. Work Progression
7. Noise
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## MBTA Investment in Newton

<b>Project</b>	<b>Overall Project Cost</b>
Green Line D-Branch Track and Signal Repl.	\$102 M
Newton Commuter Rail Stations	\$46 M
Green Line Train Protection System	\$38 M
Newton Highlands Station Accessibility	\$15 M
Commuter Rail Positive Train Control	\$6 M
Riverside Maintenance Facility Roof Replacement	\$3 M
Tree Clearing	\$2 M
Event Recorders	\$1 M
<b>Total Investment</b>	<b>\$213 M</b>



## Project Location

- Track replacement at 6 Sections between Beaconsfield and Riverside
  - 5 Sections in Newton, 1 Section in Brookline
- Signal replacement full length between Reservoir and Riverside





## Project Overview

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- Modernize Signal System Infrastructure between Riverside and Reservoir
- Centralize Signal System Equipment for easier access and maintenance
- Upgrade Track-side Signal Infrastructure
  - Signals
  - Track Switch Machines
  - Cables
  - Cable hanging system
- Provide redundant power supply system
- New 25,000 LF of mainline track
- Upgrade crossovers and track switches
- Reconstruct pedestrian crossings and truck pads





## Construction Timeline and Estimated Cost

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- Construction Advertisement: May 2018
- Contractor Notice to Proceed: July 2018
- Contract Duration: 30 Months
- Construction Begins: Mid-Sept 2018
- Substantial Completion: October 2020
- Final Completion: December 2020
- Estimated Construction Cost: \$74M





## Project Benefits

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- Modern signal system will result in fewer delays
- Fewer signal related delays will increase reliability of Green Line operations
- Centralized Instrument Houses at stations will result in workers spending less time traveling to equipment and isolating problems
- New track will enhance safety
- Speed restrictions due to existing track conditions will be removed on the “D” Branch



## Operations During Construction

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During the 30 month contract period:

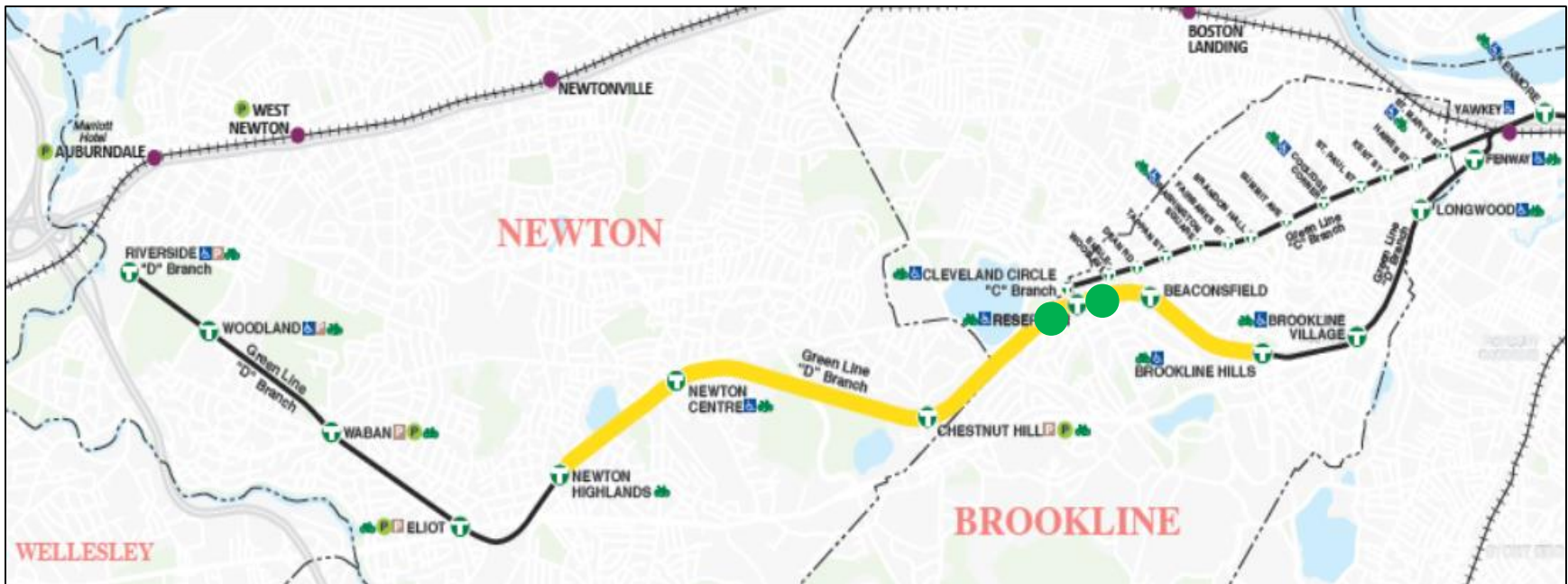
- Green Line D Branch will provide regular service except as provided below
- Sunday through Thursday certain sections of the Green Line will be closed between 9:00 pm and close of regular service
  - Sept. 10 to Dec. 28 in 2018
  - April 9 to Dec. 28 in 2019
  - April 9 to Dec. 28 in 2020
- There will be a total of 15 weekend diversions during construction
  - 14 weekends of service outages (9 pm Friday to 5 am Monday)
  - 1 weekend of service outage (9 pm Friday to 5 am Tuesday)
- Bus service will replace regular service during weeknight and weekend diversions





## Bus Diversion – Brookline Hills (or Reservoir) to Newton Highlands

Weeknights (9:00 pm to end of service) and Weekends  
(bus service will replace regular service during weekend diversions)



### Legend:

Bus Diversion Limits: 

Special Trackwork: 



## Bus Diversion – Newton Highlands to Riverside

Weeknights (9:00 pm to end of service) and Weekends  
(bus service will replace regular service during weekend diversions)



### Legend:

Bus Diversion Limits:



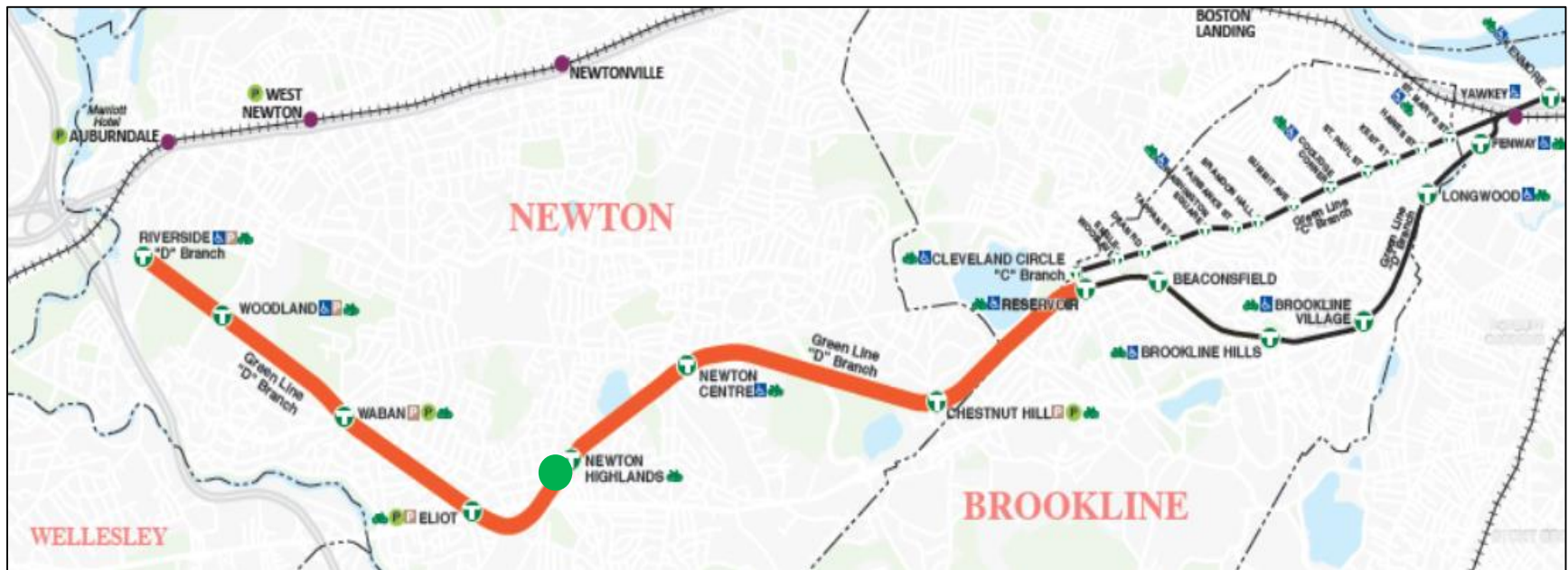
Special Trackwork:





## Bus Diversion – Reservoir to Riverside (3 Weekends)

Bus service will replace regular service during weekend diversions



### Legend:

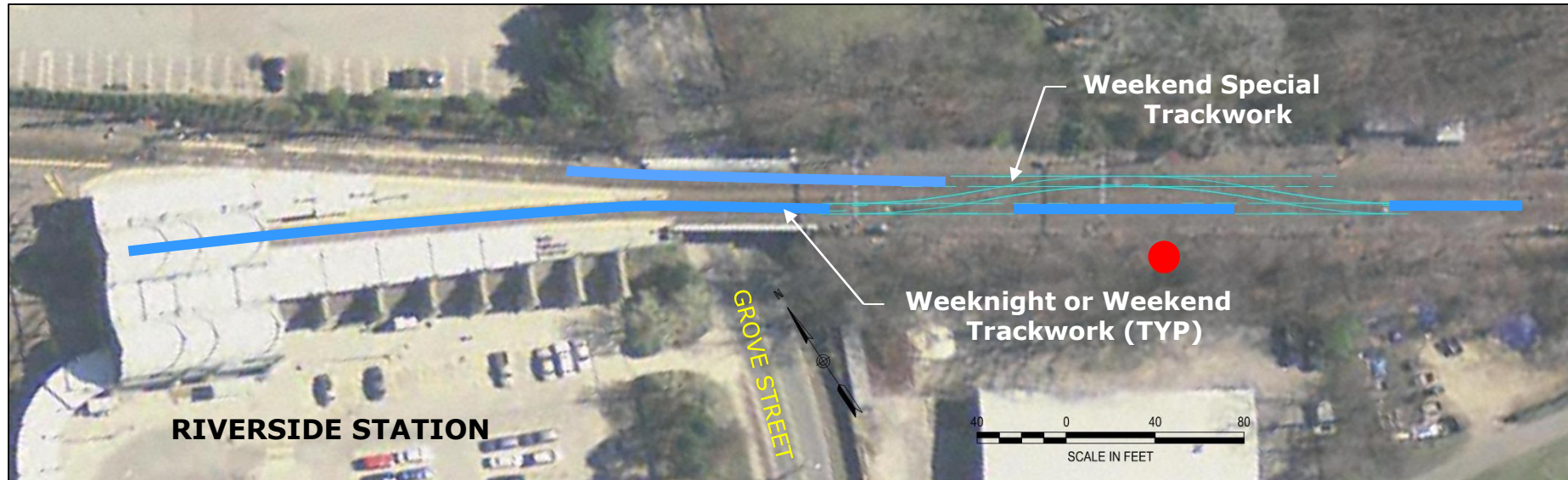
Bus Diversion Limits:

Special Trackwork:





## Riverside Station

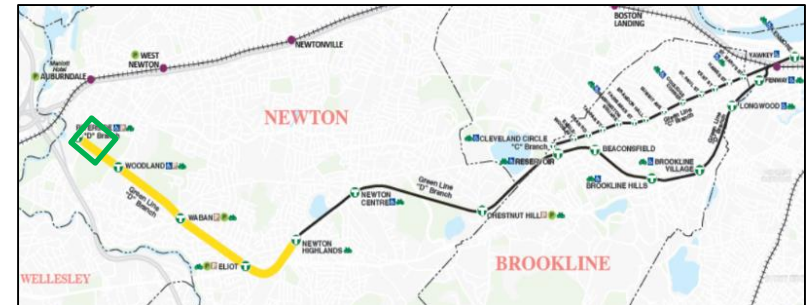


Signal work will be performed the full length of the Newton project limits

### Legend:

Trackwork:

Signal House Install:





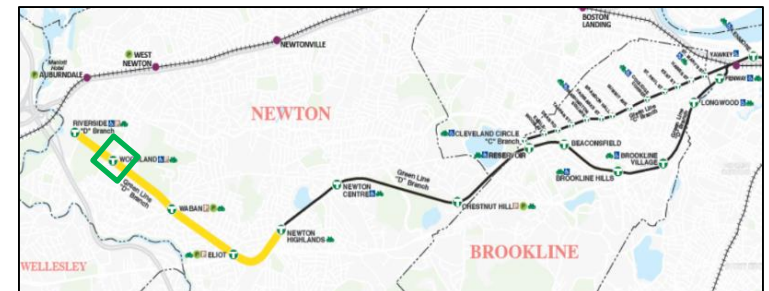
## Woodland Station



Signal work will be performed the full length of the Newton project limits

### Legend:

Signal House Install: ●









## Waban Station

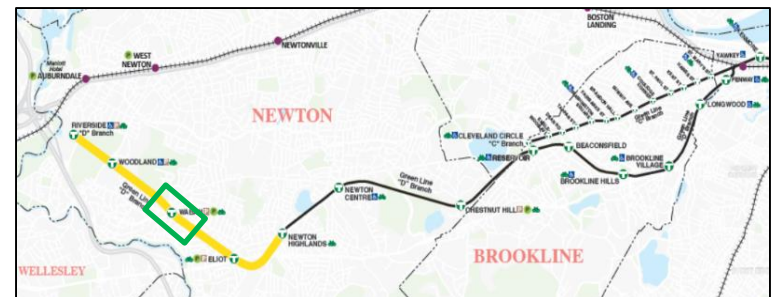


Signal work will be performed the full length of the Newton project limits

### Legend:

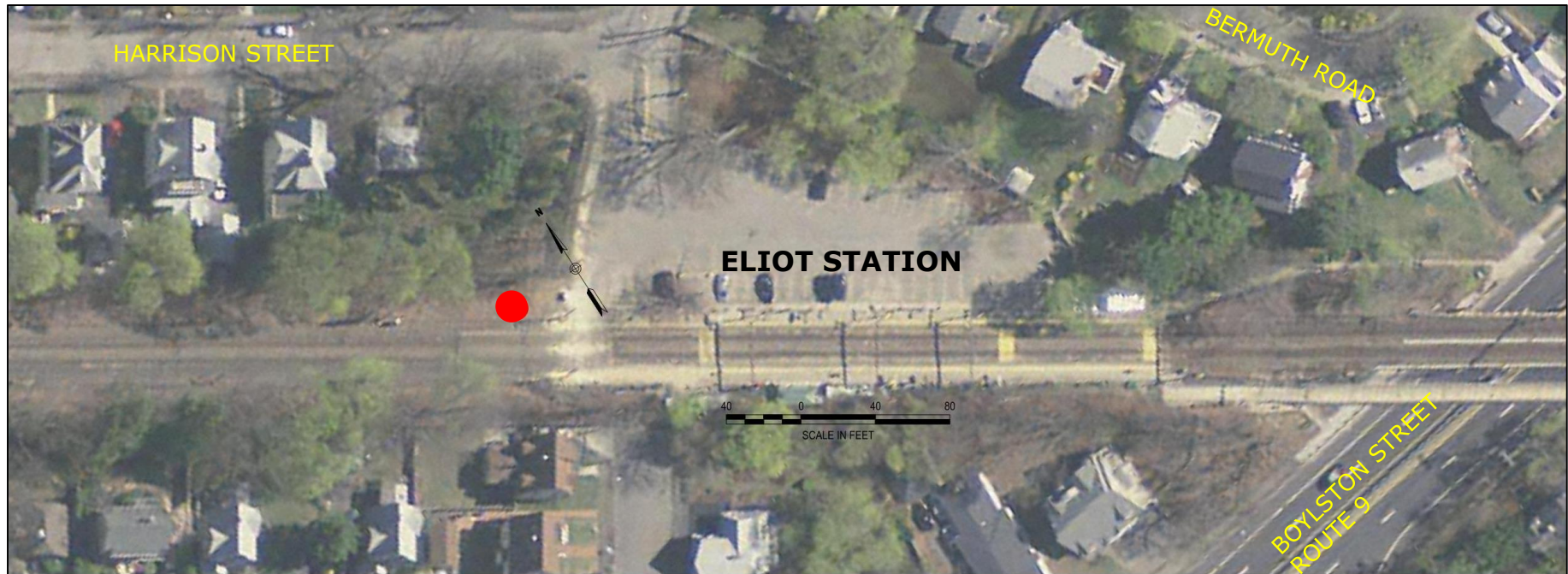
Trackwork: 

Signal House Install: 





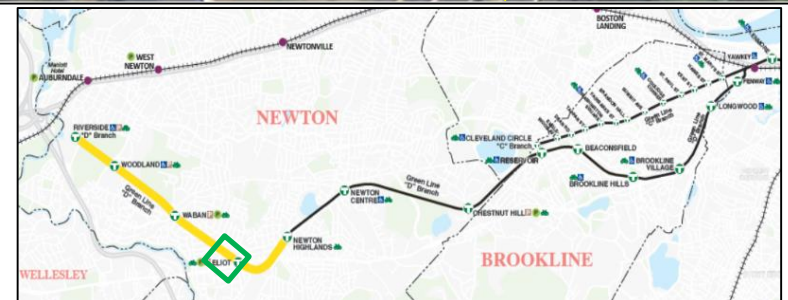
## Eliot Station



Signal work will be performed the full length of the Newton project limits

### Legend:

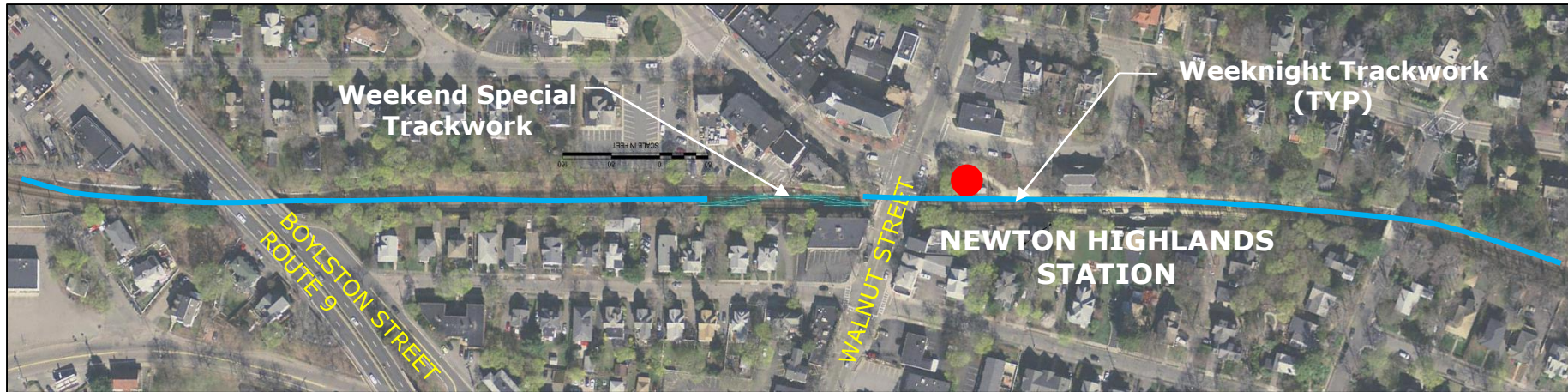
Signal House Install: ●







## Newton Highlands Station



Signal work will be performed the full length of the Newton project limits

### Legend:

Trackwork:

Signal House Install:









## Newton Centre Station

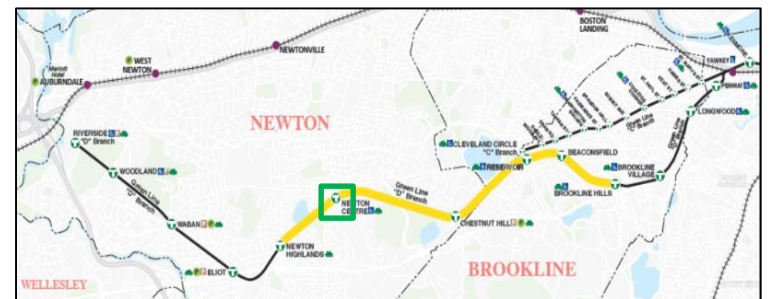


Signal work will be performed the full length of the Newton project limits

### Legend:

Trackwork: 

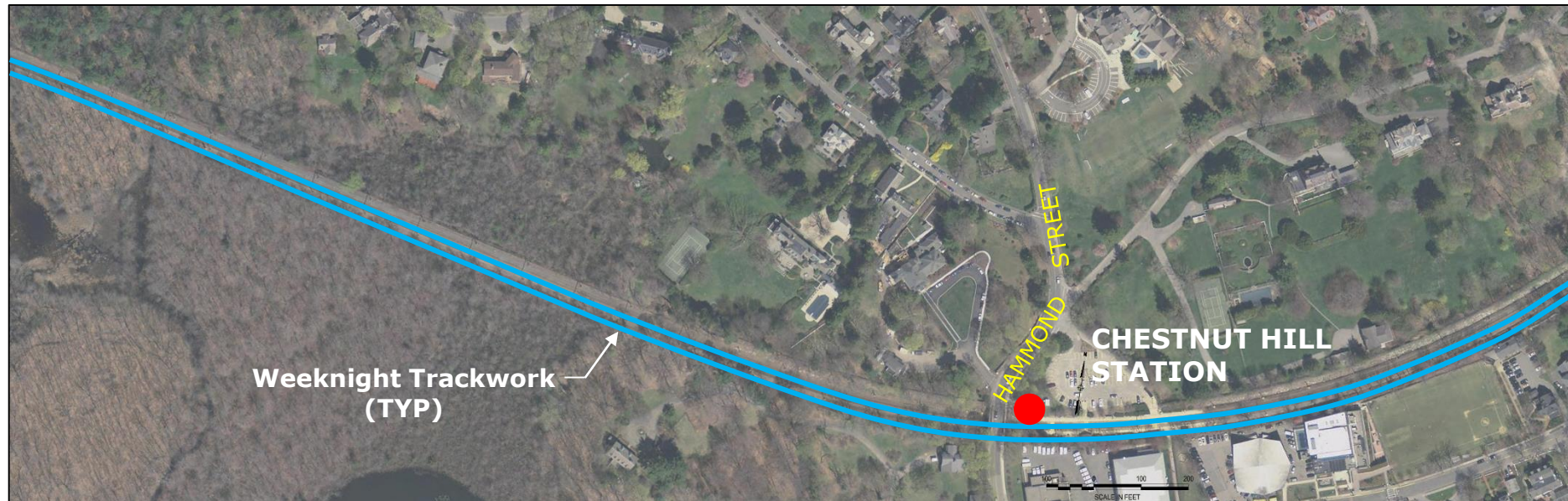
Signal House Install: 









## Chestnut Hill Station

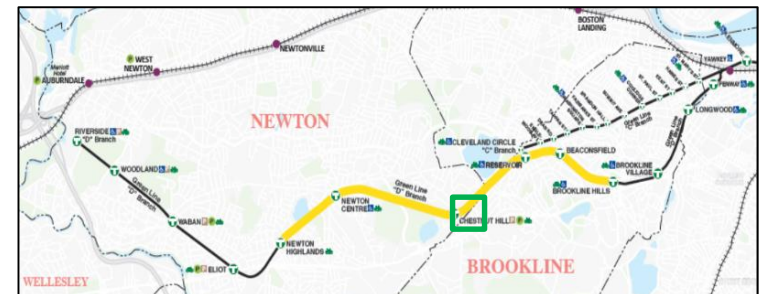


Signal work will be performed the full length of the Newton project limits

### Legend:

Trackwork: 

Signal House Install: 





## Weeknight Work (Early Access) – General Timeline

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- 9:00 pm normal service ends and bus diversion begins
- Make Safe and Mobilize
  - MBTA Power Department shuts down power on D-Branch
  - MBTA Power Department grounds catenary in work zone
  - Contractor mobilizes to truckpad nearest to the worksite
  - Contractor receives all clear to begin work
- 12:30 am bus diversion ends at close of normal service
- Contractor completes work and demobilizes from work zone
- MBTA Power Department restores power
- 5:00 am normal service resumes



## Signal Work Progression

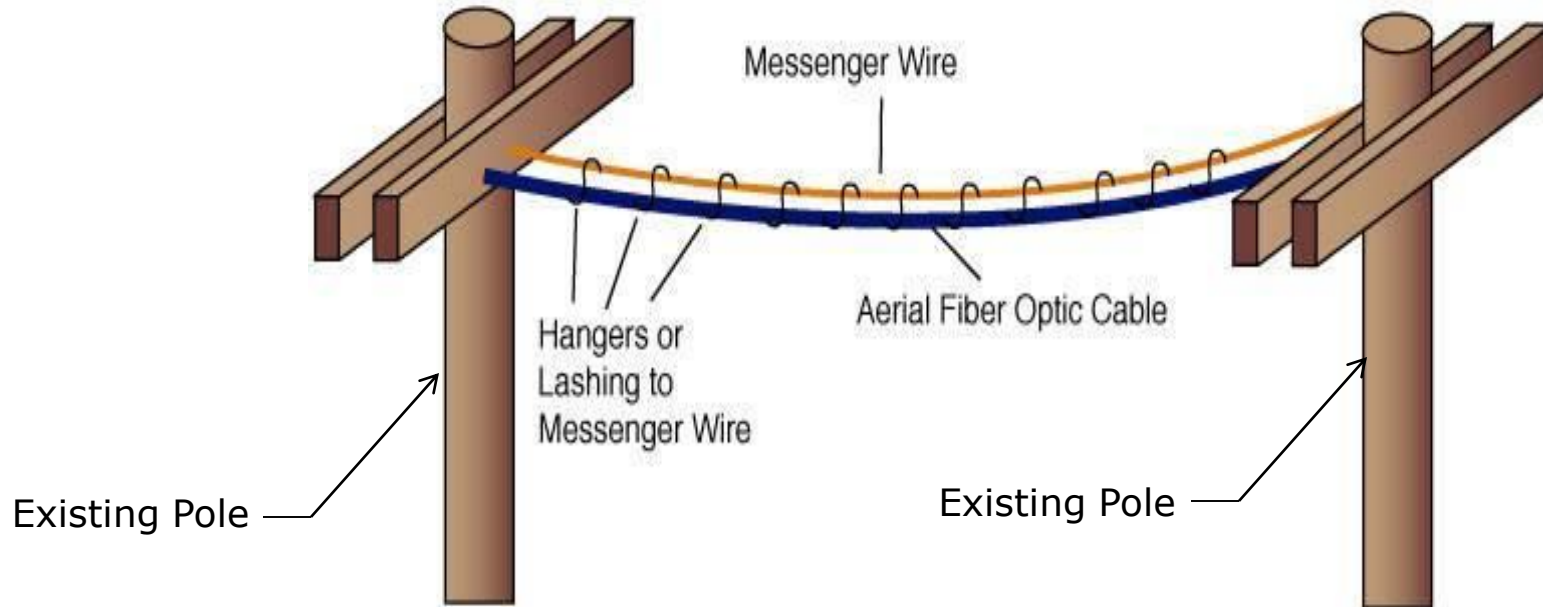
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- Install new messenger wire and cable tray
- Run fiber optic line in cable tray
- Dig trenches for conduit that will run from catenary pole to new equipment location
- Dig and install new foundation
- Install new trackside equipment
- Pull cable through conduit to new equipment
- Cut, splice and terminate new cable to new equipment
- Test and commission new signal equipment houses and track-side equipment
- Demo and remove existing track-side equipment





## Install New Messenger Wire and Cable Tray



- Messenger wire will be installed pole to pole with cable tray hooked and hung from the messenger wire.
- Fiber optic cable to be placed in the cable tray.





## Dig Trenches for Conduit and New Foundations

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- Trenches will be dug for cable conduit that will run under ground.





## Pulling Cable Through Conduit

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- After the trenches are dug and the conduit is placed, the cables will be pulled through the conduit and brought to the new equipment





## Installation and Demolition New Wayside Signal Equipment

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- New track-side equipment will be installed and existing removed







## Trackwork Progression

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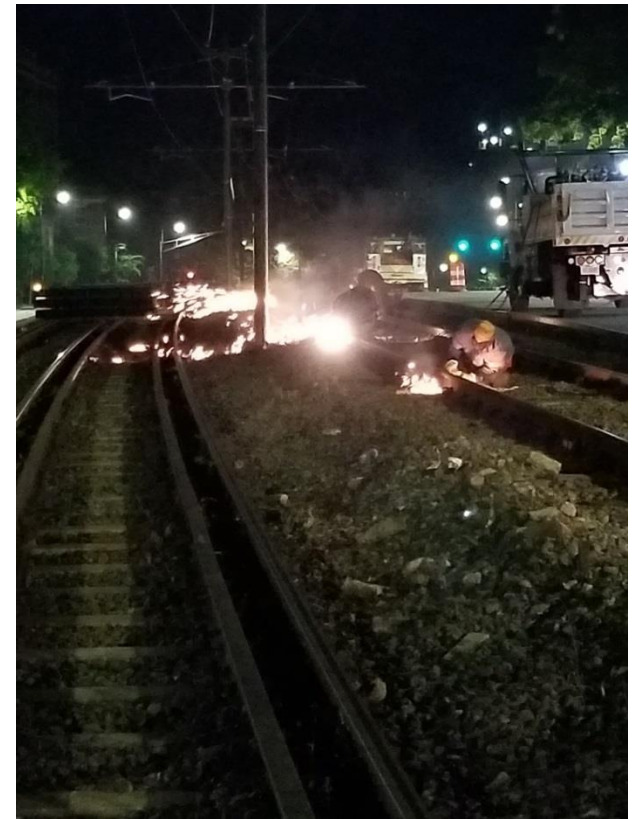
- Cut rails
- Remove existing track panel
- Remove existing ballast
- Install track panel
- Place new ballast
- Tamp track



## Cut Rails

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- Contractor determines work limits and cuts rails





## Remove Existing Track Panel

- Remove existing track panel and move offsite for dismantling







## Remove Existing Ballast

- Dig 6" below proposed bottom of tie to remove ballast





## Install Track Panel

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- Install and connect new track panel







## Place New Ballast

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## Tamp Ballast

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- Tamp ballast and set track to proper grade

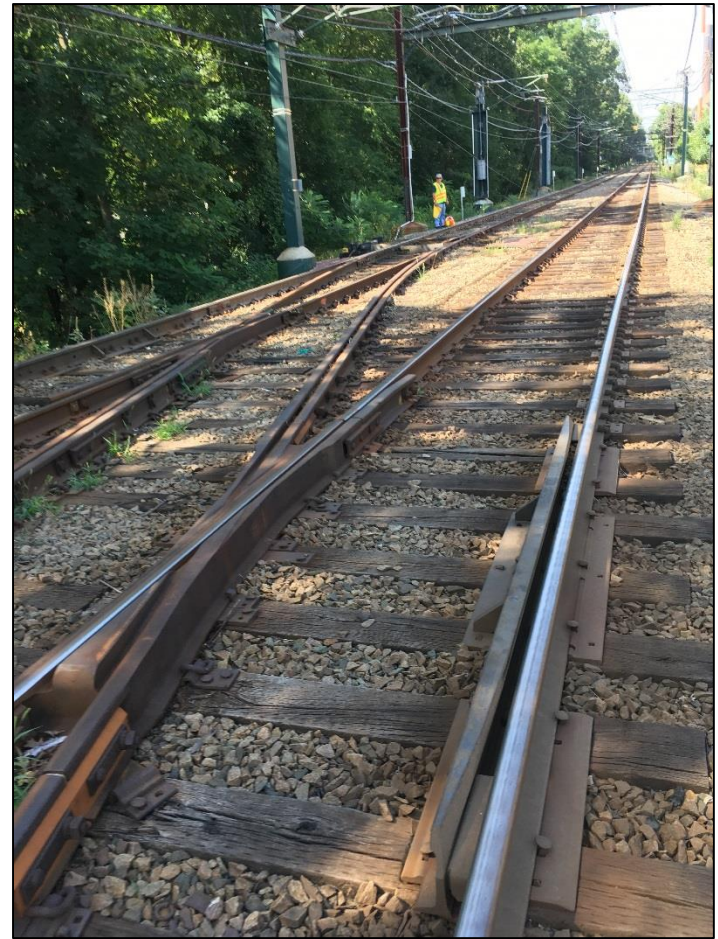
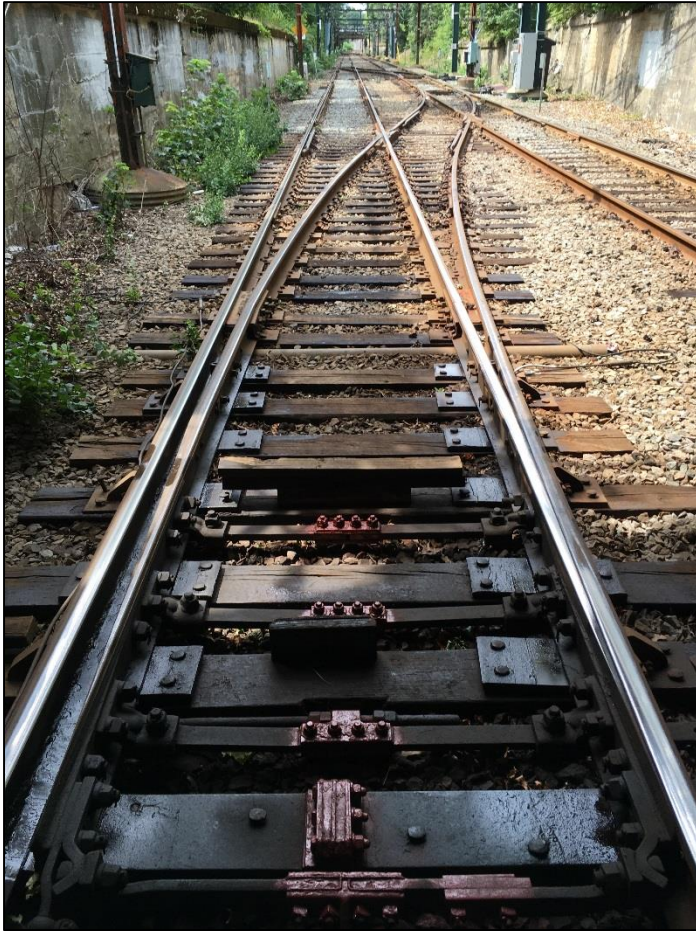




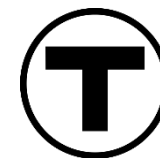


## Special Trackwork (Weekend)

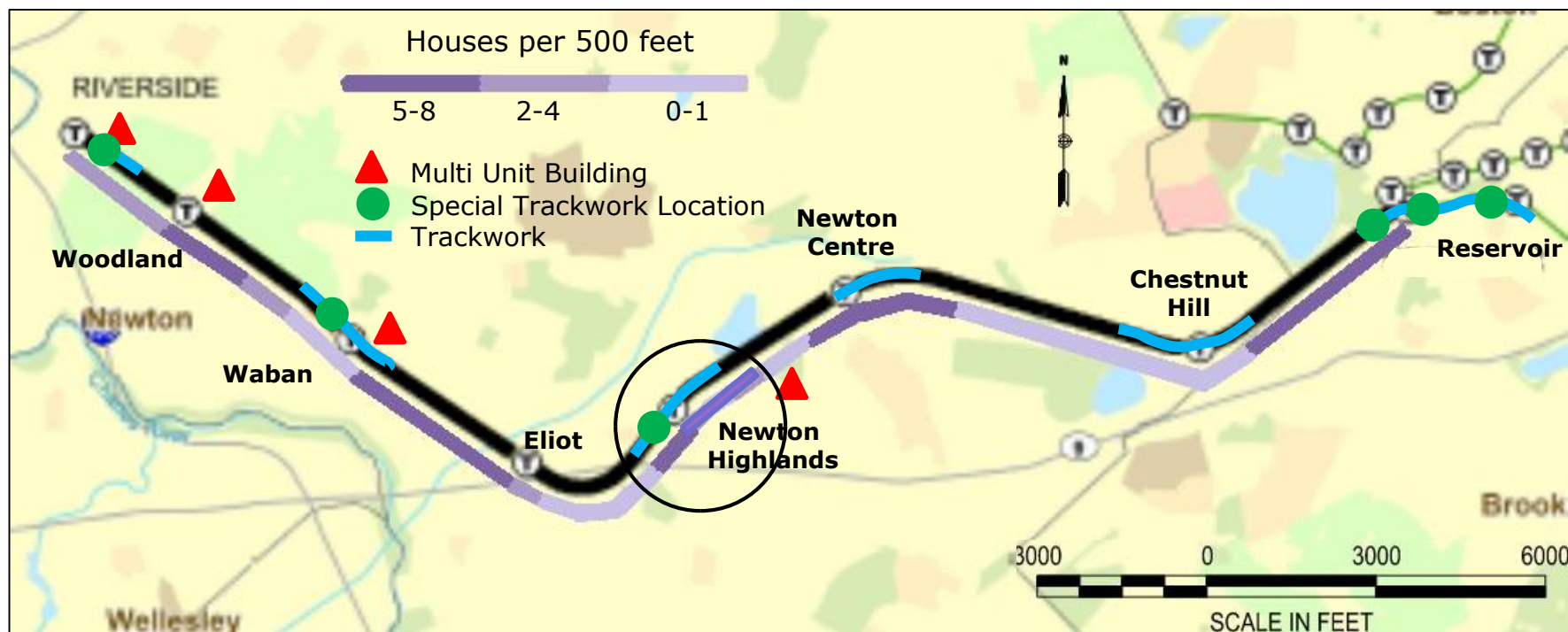
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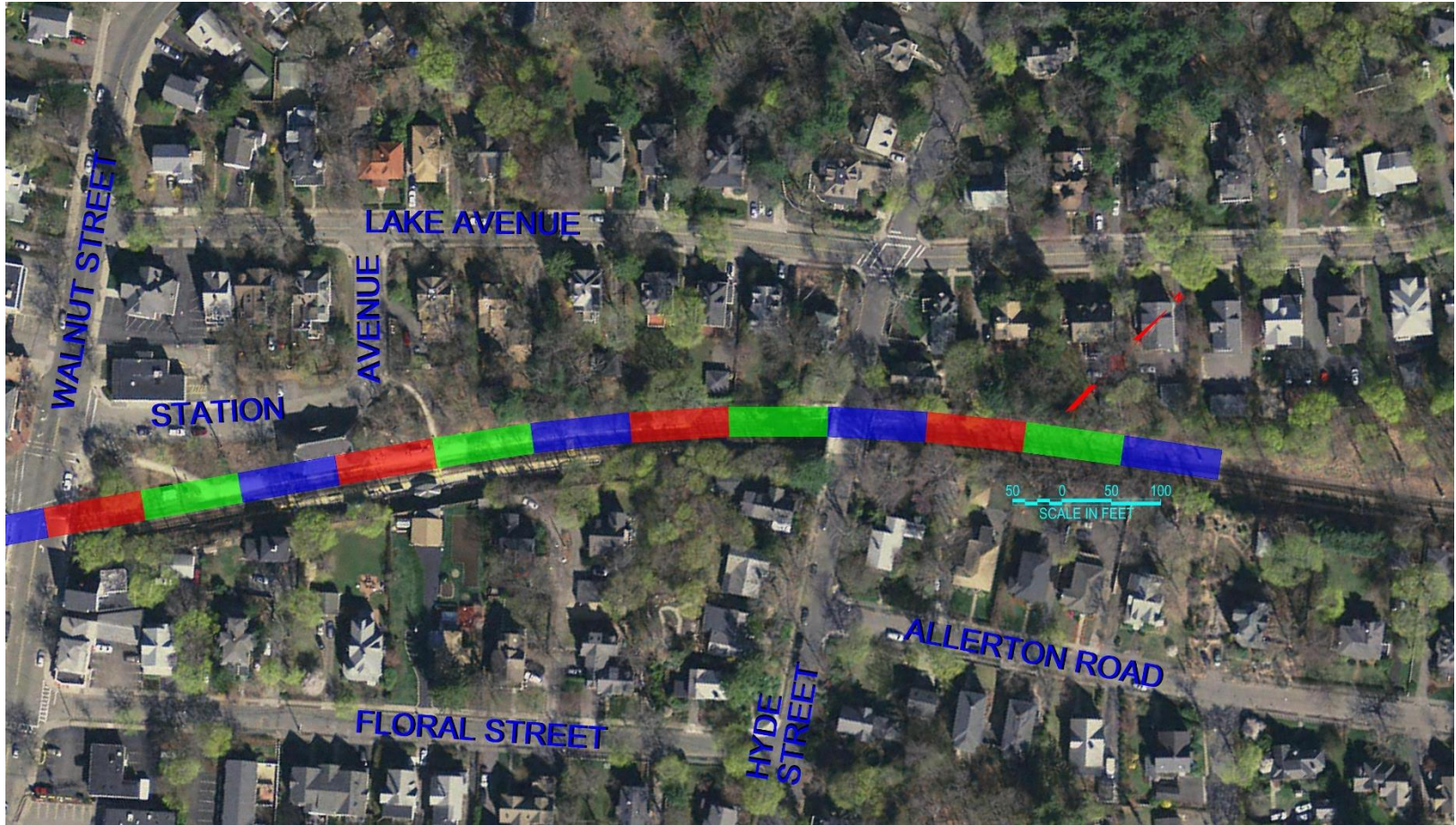


## Residential Density (City of Newton)



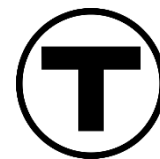


## Expected Trackwork (100 LF track segments)

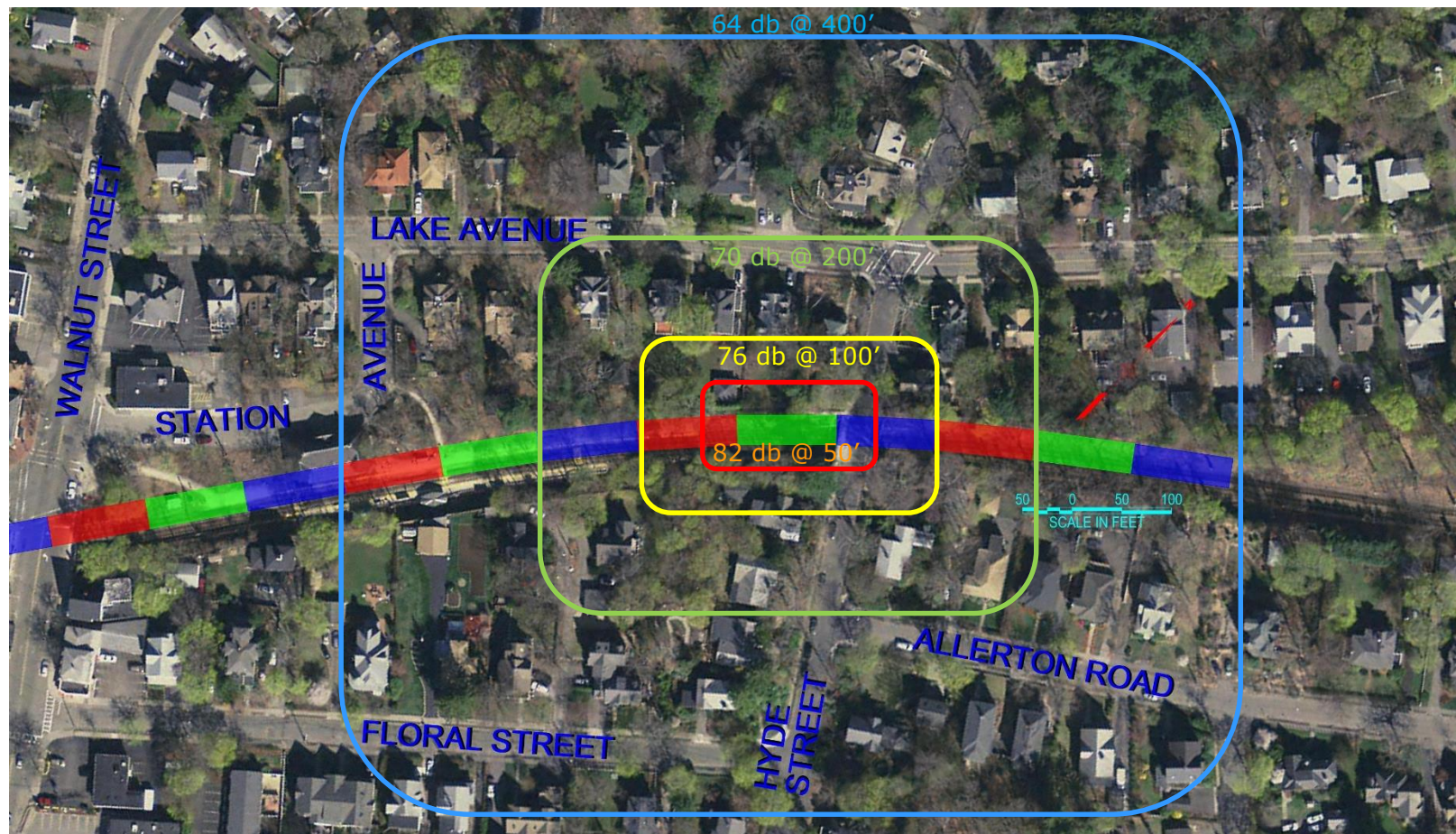


Newton Highlands is one of the densest residential areas near the track  
Each colored block represents 100 LF of trackwork





## Expected Trackwork (**Unmitigated** Maximum Noise Level)



Newton Highlands is one of the densest residential areas near the track  
Each colored block represents 100 LF of trackwork



## Loudness Comparison Chart (dBA)

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 1000 ft	110	Rock Band
Gas Lawn Mower at 3 ft	100	
	90	Food Blender at 3 ft
Diesel Truck at 50 ft at 50 mph	80	Garbage Disposal at 3 ft
Noisy Urban Area, Daytime		Vacuum Cleaner at 10 ft
Gas Lawn Mower at 100 ft	70	Normal Speech at 3 ft
Commercial Area		
Heavy Traffic at 300 ft	60	Large Business Office
Quiet Urban, Daytime	50	Dishwasher Next Room
Quiet Urban, Nighttime		Theater, Large Conference Room (Background)
Quiet Suburban, Nighttime	40	Library
	30	Bedroom at Night, Concert Hall (Background)
Quiet Rural, Nighttime		Broadcast/Recording Studio
	20	
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing



## Noise Generating Work Activities (Weeknight Trackwork)

Work Activity	Activity Duration	Noise Level	Type of Noise	Can Noise be Suppressed
Cut rails	Short	Loud	Sharp and Intermittent	No
Remove existing track panel	Medium	Medium	Heavy Machinery	Yes
Remove existing ballast	Medium	Medium	Heavy Machinery	Yes
Install track panel	Medium	Medium	Heavy Machinery	Yes
Place new ballast	Short	Medium	Heavy Machinery	Yes
Tamp track	Medium	Loud	Rumbling	No



## Typical Noise Mitigation Measures

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- Use self adjusting backup alarms
- Limit truck and equipment idling
- Equip compressors with silencers on intake lines
- Equip gas or oil operated equipment with silencers or mufflers on intake and exhaust lines
- Line dumping bins, hoppers, and trucks with sound-deadening material
- Use noise blanket and shielding where possible
- Assemble track panels offsite
- Access and delivery to work site through MBTA ROW



## Contractor Requirements (Noise Control)

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- Contractor to submit Noise Control and Monitoring Plan to the MBTA for review and approval 60 days prior to starting work. Will include:
  - Identification of equipment that can and cannot be operated with sound suppression
  - Means of sound suppressing equipment and other noise
  - Approach to monthly noise monitoring
  - Hotline number and management of the hotline
- Implementation of sound suppression on applicable equipment
- Monthly monitoring
- Receive and respond to hotline calls





## Communications Plan (Newton)

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### **Public Meetings**

- One public meeting prior to construction (early Sept.)
- Newton City Council briefing
- Periodic project briefings

### **Project Website and City of Newton Website**

- Regular construction updates
- Copies of presentations
- Listing of upcoming meetings
- Register to be on project email distribution list

### **Email Advisories**

- Regular construction updates emailed to distribution list (generally weekly once construction begins)





## **Communications Plan (Newton)**

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### **Media Advisories and Social Media**

- Issue periodic media advisories to promote the project and advise the public of the ongoing work
- Tweet notifications and post T-alerts

### **Coordination with City of Newton**

- Provide weekly construction updates
- Quarterly reports to the City Council

### **In-Person Notifications**

- Distribute flyers regarding construction work as it progresses (abutters, adjacent businesses, Green Line Station Platforms)

### **Project Hotline**

- Establish a 24/7 hotline for taking calls
  - Calls will be logged and reviewed with timely follow-up
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# Questions?